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COOLING TOWER

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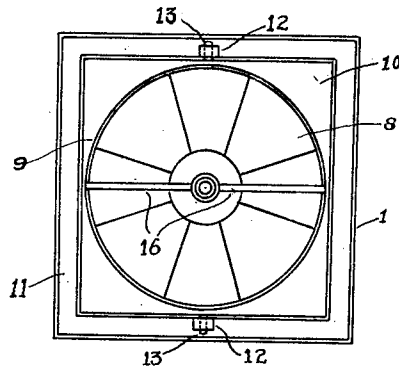


FIG. 1

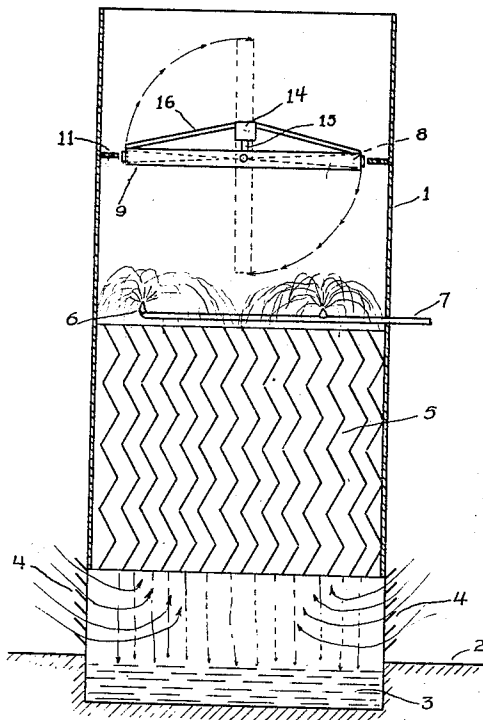


FIG. 2

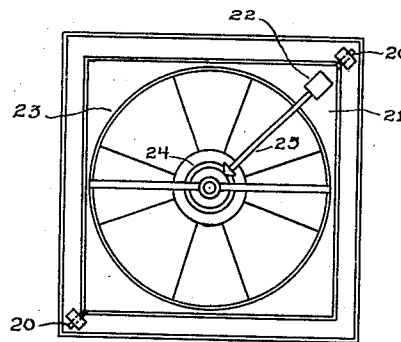


FIG. 3

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COOLING TOWER

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My invention is for an improvement in cooling towers and relates more particularly to the induced draft type.

The objects of my invention are to provide
 5 a cooling tower in which the air is drawn through the tower by means of a fan in an efficient manner, also to provide, in an induced draft tower, a convenient means for obtaining a substantially unobstructed draft
 10 through the chimney of the tower when the fan is not in operation, also to provide, in an induced draft cooling tower, a fan which may be interchangeably positioned to operatively induce air currents in the tower and to mini-
 15 mize its obstruction when inoperative.

I accomplish these objects by the device illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of the cooling
 20 tower,

Figure 2 is a sectional view in elevation on the line 2—2 of Figure 1, and

Figure 3 is a detail view showing a modification.

25 Similar characters of reference refer to similar parts throughout the several views.

A chimney 1 of any desired construction is mounted on a suitable foundation 2. Beneath the chimney and preferably sunk in the foundation 2 is a basin 3. The sides of the chimney at the base have a louver system 4 through which air may enter. Above the louver system in the chimney 1 are a series of slats or cooling surfaces 5 which are set at an angle
 30 to each other as is clearly shown in the drawing. Above the cooling surfaces and also within the chimney 1 are a plurality of distributors 6 which are operatively connected by means of piping 7 to a water supply, not
 35 shown.

Substantially at the top of the chimney 1 is a fan 8, preferably of the disc type, which is mounted in a housing 9. When the design of the chimney is square, then the housing 9
 40 will be fixed in a door 10 which is rotatable on an axis through the midpoints of opposed sides of the door. There may be a horizontal platform 11 around the inside of the chimney substantially in the plane of the axis of the
 45 door, having journals 12, 12 in which the

trunnions 13, 13 are mounted. When the door is horizontal or closed it will abut the edges of the platform making substantially an air tight joint. Catch means of any desired type
 50 are used to hold the fan in its horizontal position. The platform is at sufficient height from the distributors so that the door will not strike them when it is rotated on the trunnions 13 through ninety degrees to a vertical position in the chimney. The fan is of
 55 the usual disc type, having a motor 14 mounted on the axis 15 of the fan proper. As before stated the fan is mounted in the housing 9 and this is accomplished by means of struts or braces 16 which are fixed to the motor 14
 60 and to housing 9. If desired the fan may be driven in any other suitable and well known manner.

In Figure 3, I show a modification of the motor drive for the fan. Here the door is
 65 mounted on trunnions 20, 20 which are at opposite corners of the door 21 so that the door will rotate on a diagonal axis. The motor 22 may then be mounted outside of the housing 23 and preferably on a corner of the door 21
 70 adjacent one of the trunnions 20. With this arrangement a bevel gear 24 is fixed to the shaft of the fan and a bevel pinion on the motor shaft 25 engages therewith.

In operation, water to be cooled is fed
 75 through pipes 7 from the water supply to the distributors 6. Here the water is evenly distributed over the top of the slats or cooling surfaces 5 through which the water will drip. As the water drips down through the
 80 slats, it will strike them and trickle along over the cooling surfaces. When the draft thru the chimney is not sufficient, it may be increased by the fan 8. This may be necessary as the water is cooled solely by the con-
 85 tact of the air with water, as is well known in the art. If it is not desired to use the fan it may be rotated about its axis into the position shown in dotted lines in Figure 2. It is clear that in this position it will render
 90 a minimum of obstruction to the flow of air through the chimney, and a natural draft will result.

It is obvious that when the horizontal section of the chimney is circular the housing 9
 95

will fit the platform or ledge 11 and make a practically air tight joint. In this case the trunnions can be directly attached to the housing and the door dispensed with.

5 It is also clear that the motor can be rigidly attached to the chimney 1 and drive the fan by shaft and bevel gear, a jaw clutch being provided to release the section of shaft on the door when it is rotated.

10 Having thus described my invention, what I claim is:

1. In an induced draft cooling tower, the combination of a chimney, cooling surfaces therein, means for supplying water to said
15 cooling surfaces, means for admitting air to said chimney to cool the water therein, a door positioned normally across the chimney, a fan in said door and means to drive the fan to provide a forced draft in the chimney and
20 means to rotate said door and fan to a vertical inoperative position to provide a practically unobstructed draft passage in the chimney.

2. In an induced draft cooling tower the
25 combination of a chimney, a fan normally positioned horizontally therein and adapted in its said normal position to produce a forced draft in the chimney, means for supplying water to be cooled by atmospheric
30 action in said chimney and means for rotating said fan to a vertical position when inoperative to provide a substantially unobstructed passage in the chimney to permit the cooling of the water by natural draft.

35 In testimony whereof I affix my signature.
BARTON H. COFFEY.

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